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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/744,586	01/26/2001	Kenji Nakao	OGOH:063	1645

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Roger W Parkhurst
1421 Prince Street Suite 210
Alexandria, VA 22314-2805

EXAMINER

PIZIALI, JEFFREY J

ART UNIT	PAPER NUMBER
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2673

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DATE MAILED: 06/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/744,586

Applicant(s)

NAKAO ET AL.

Examiner

Jeff Piziali

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5-30, 33, 34, 36, 38-41 and 43-152 is/are pending in the application.
- 4a) Of the above claim(s) 5-7, 13-28, 30, 33, 34, 36, 38-41 and 43-152 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-12 and 29 is/are rejected.
- 7) ☒ Claim(s) 29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been effectively placed of record in the file.

Drawings

2. The drawings were received on 14 January 2004. These drawings are acceptable.

Election/Restrictions

3. Applicants' election of Species I (i.e. Claims 5-32) and Invention Group 3 (i.e. Claims 8-12, 29, and 31) in Paper No. 7 (filed 14 January 2004) is acknowledged. Because applicants did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
4. Claims 5-7, 13-28, 30, 33, 34, 36, 38-41, and 43-152 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 7 (filed 14 January 2004).

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5. Applicants are reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Objections

6. Claim 29 is objected to because of the following informalities: line 3 should read, "voltage range" in place of "voltage rand." Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claim 12 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Claim 12 newly recites (see Paper No. 9 -- filed 7 April 2004) the limitation, "the scattering gain of the liquid crystal layer is at least 10 and at most 200 at usage temperatures of 0 to 60°C" (see lines 3-6). However, the specification contrarily describes, "the values of the scattering gain... are roughly between about 10 and 200 in a usage temperature range of 10°C to 60°C" (see Page 53,

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Lines 16-18). As such, the specification does not explicitly contain a written description of the invention's scattering gain range transpiring at the 0 to 60°C temperature range recited in claim 12.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 8-12, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmae et al. (US 5,610, 735) in view of Sadovnik et al. (US 5,764,317).

Regarding claim 8, Ohmae discloses a reflective liquid crystal display element comprising: a pair of substrates [Fig. 2; 21 & 22]; a polymer-dispersed liquid crystal layer [Fig. 2; 23] comprising liquid crystal drops dispersed in a polymer, the polymer-dispersed liquid crystal layer being located between the pair of substrates; and a reflective layer [Fig. 2; 26] located on one substrate of the pair of substrates, wherein: the polymer-dispersed liquid crystal layer is for changing a light-scattering state of the polymer-dispersed liquid crystal layer upon application of an electric field across the layer (see Column 9, Line 55 - Column 10, Line 7); and the polymer-dispersed liquid crystal layer also is for operating in a normally-white-mode (see Column 5, Lines 60-65) at a white luminance level when a luminance level of the display element is set at a peak reflectivity value in voltage-reflectivity characteristics of the display element (see Column 10, Lines 1-7).

Ohmae does not expressly disclose satisfying the relation $50\exp(-0.4d) < SG < 360\exp(-0.47d)$, wherein d is a thickness of the polymer-dispersed liquid crystal layer and SG is a scattering gain of the polymer-dispersed liquid crystal layer. Ohmae does teach a scattering gain of 25, but only mentions a 20 micron thick liquid crystal layer (see Column 11, Lines 1-30) -- which is too thick to satisfy the above relation. However, Sadovnik discloses using a 4 micron thick liquid crystal layer (see Column 12, Lines 1-6). Ohmae and Sadovnik come from the shared field of polymer-dispersed liquid crystal displays. Therefore, it would have been obvious to one skilled in the art at the time of invention to use Sadovnik's 4 micron cell gap within Ohmae's reflective liquid crystal display element, so as to provide the cell gap minimum of the Goosh-Terry Curve (see Sadovnik: Column 12, Lines 1-6). Moreover, doing so, would satisfy the above " $50\exp(-0.4d) < SG < 360\exp(-0.47d)$ " relation.

Regarding claim 9, Ohmae discloses the scattering gain is the scattering gain for transmitted light when the polymer-dispersed liquid crystal layer is located in a transmissive panel (see Fig. 3; Column 11, Lines 1-30).

Regarding claim 10, Sadovnik discloses the thickness d of the polymer-dispersed liquid crystal layer is at least $3\mu\text{m}$ and at most $8\mu\text{m}$ (see Column 12, Lines 1-6).

Regarding claim 11, Ohmae discloses the scattering gain of the liquid crystal layer is at least 10 and at most 200 (see Fig. 3; Column 11, Lines 1-30).

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Regarding claim 12, Ohmae discloses the scattering gain of the liquid crystal layer is at least 10 and at most 200 at usage temperatures of 0 to 60°C (see Fig. 3; Column 2, Lines 29-38 and Column 11, Lines 1-30).

Regarding claim 29, Ohmae discloses means for driving a voltage range of the electric field, wherein the driving voltage range is a range in which the luminance decreases monotonously from a peak value (see Figs. 3 & 4; Column 11, Lines 1-65).

Response to Arguments

11. Applicants' arguments filed 7 April 2004 (Paper No. 9) have been fully considered but they are not persuasive. The applicants contend the cited prior art of Ohmae et al. (US 5,610, 735) neglects to teach a polymer-dispersed liquid crystal layer operating in a normally-white-mode at a white luminance level when a luminance level of the display element is set at a peak reflectivity value in voltage-reflectivity characteristics of the display element. However, the examiner respectfully disagrees. Ohmae expressly discloses the polymer-dispersed liquid crystal layer is for operating in a normally-white-mode (see Column 5, Lines 60-65) at a white luminance level when a luminance level of the display element is set at a peak reflectivity value in voltage-reflectivity characteristics of the display element (see Column 10, Lines 1-7).

The applicants additionally contend neither Ohmae nor Sadovnik et al. (US 5,764,317) teach the peak reflectivity value of the polymer-dispersed liquid crystal layer is correlated with the scattering gain (SG) of the polymer-dispersed liquid crystal layer, and that there is a range of optimum scattering gains for achieving an even larger peak value. However, the examiner

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respectfully disagrees. Although such specific limitations do not presently exist in instant claim language, Ohmae clearly does disclose the peak reflectivity value of the polymer-dispersed liquid crystal layer is correlated with the scattering gain of the polymer-dispersed liquid crystal layer, and that there is a range of optimum scattering gains for achieving an even larger peak value (see Figs. 3 & 4; Column 11, Lines 1-65).

Lastly, the applicants contend neither Ohmae nor Sadovnik et al. (US 5,764,317) teach driving a voltage range of the electric field, wherein the driving voltage range is a range in which the luminance decreases monotonously from a peak value. However, the examiner again respectfully disagrees. Ohmae discloses driving a voltage range of the electric field, wherein the driving voltage range is a range in which the luminance decreases monotonously from a peak value (see Figs. 3 & 4; Column 11, Lines 1-65).

By such reasoning, rejection of the claims is deemed necessary, proper, and thereby maintained at this time.

Conclusion

12. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Piziali whose telephone number is (703) 305-8382. The examiner can normally be reached on Monday - Friday (6:30AM - 3PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (703) 305-4938. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



8 June 2004



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